

1956

Outline of Expanded Research on the Screw-worm with the
View of Developing and Eradication Program in
Florida

- I. Study and develop methods and procedures for mass rearing of screw-worms (50 million per week). Research will be directed to developing a satisfactory million per week unit. Graham, Hopkins, and Dudley.
 - a. Study and compare cabinet vs. open room rearing.
 - b. Study humidity, temperature and food requirements of each of the three larval stages. Set up separate rooms or cabinets, i.e. starting 1st stage larvae, 1 to 3 day old larvae, and finishing room. Devise rapid and better means of washing and transferring larvae. Devise rapid means of collecting and sacking pupae.
 - c. Composition of finishing medium. Need for preservative. Possible use of antibiotics in medium of different rearing steps. Optimum proportions of meat, blood, and water.
 - d. Develop rapid mixing techniques of media. Devise improved and fast means of "egging" flies. Devise systematic and fast means of feeding and transferring flies.
- II. Studies on developing lower cost medium for three different rearing steps. Graham, Hopkins, and Dudley.
 - a. Test inclusion of from 10% to 50% of cheap proteins such as fish products, soybean meals, dried blood or dried eggs in rearing media.
 - b. Test fecundity, longevity, and sexual virility of flies from best medium.
- III. Development of a sexually vigorous and long-lived strain of screw-worm flies. Baumhover and helper.
 - a. Select from a wild Florida strain, males which mate an average of 10 times or about twice that of the Kerrville strain.
 - b. Select for longevity of adults. Should live 20 days in laboratory or 50 % longer than Kerrville strain.
 - c. Follow detailed procedures suggested in Dr. Bushland's letter of February 6, 1953, to Mr. Eddy.

IV. Develop attractants for screw-worm fly. Baumhover, bacteriologist, and chemist.

- a.. Test for viability old preserved bacterial cultures stored at Kerrville and re-establish strains still alive.
- b. Following techniques previously successful for Mrs. Kastl, isolate new strains from naturally infested wounds of animals.
- c. In cooperation with entomologists, test strains for attractiveness to flies.
 1. Laboratory tests smearing guinea pigs.
 2. Laboratory tests smearing non-living objects (use warmth).
- d. Studies on other attractants. Entomologist and chemist
 1. Investigate what makes egg masses stimulate oviposition.
 2. Perform experiments analogous to those done on house flies on fly factor, i.e., allow screw-worm flies to feed on sugar and extract attractant. Study relationship of "fly factor" of other species of flies with the screw-worm fly.
 3. Determine why fly rearing medium is attractive to flies. Study effect of temperature, humidity, and other properties of medium on fly attractiveness. Make preliminary separations of possible attractive parts of various media.
 4. Attempt to isolate, concentrate, and identify attractive materials in all studies.
- e. Field evaluation of attractants.
 1. Devise appropriate methods of evaluating attractants under different field conditions.

V. Field surveys. Skipper.

- a. Continue overwintering surveys.
- b. Study and correlate overwintering line with temperatures.
- c. Study and record incidence of screw-worm fly populations in each county using livestock and wild animals as a basis for estimates. Operate goat pens and status traps in questionable areas for egg mass records.

- IV. Develop alternatives for screw-worm fly. However, entomologist, and chemical.
- a. Test for viability of preserved bacterial cultures stored at low temperature and re-establish strains will allow.
- b. Following techniques previously successful for live, dead, isolate new strains from naturally infected wounds of animals.
- c. In cooperation with entomologist, test strains for effectiveness to flies.
1. Laboratory tests assessing flies.
2. Laboratory tests assessing non-living objects (see sample).
- d. Studies on other alternatives. Entomologist and chemist.
1. Investigate what makes egg masses attractive to flies.
2. Perform experiments analogous to those done on house flies on fly factor, i.e., allow screw-worm flies to feed on sugar and extract attractant. Study relationship of "fly factor" of other species of flies with the screw-worm fly.
3. Determine why fly feeding medium is attractive to flies. Study effect of temperature, humidity, and other properties of media on fly attractiveness. Make preliminary separation of possible attractive parts of various media.
4. Attempt to isolate, concentrate, and identify attractive materials in all media.
- e. Field evaluation of alternatives.
1. Develop appropriate methods of evaluating alternatives under different field conditions.
- V. Field surveys. Shipper.
- a. Continue overwintering surveys.
- b. Study and correlate overwintering flies with temperatures.
- c. Study and record incidence of screw-worm fly populations in each county using livestock and wild animals as a basis for estimation. Separate goat pens and other traps in questionable areas for egg mass records.

VI. Stockpile screw-worms. Graham.

- a. Determine minimum temperature that retards pupation without ill effect on survival.
- b. Find maximum pupal period which does not adversely affect emergence of adults. (Through temperature control)
 1. Conduct morphological studies of pupae to establish development equivalent to 5 days at 80° F. Perform appropriate sterilization experiments.
- c. Determine how long adults can be held at reduced temperatures without harm.

VI. *Stecophilus serripes* Graham.

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1. Conduct morphological studies of pupae to establish development equivalent to 5 days at 80° F. Perform appropriate sterilization experiments.
- c. Determine how long adults can be held at reduced temperatures without harm.